



Interdecadal changes in the co-variability of North Pacific Oscillation and Pacific Meridional Mode and their impact on the tropical Pacific climate variability

So-Jung Shin and Soon-Il An
Yonsei University, Seoul, Korea, Republic Of

North Pacific Oscillation (NPO) and Pacific Meridional Mode (PMM) are known as the representatives of extratropical stochastic forcings to influence the tropical Pacific climate, especially El Niño-Southern Oscillation (ENSO), through a wind-evaporation-SST (WES) feedback mechanism (a.k.a. 'seasonal footprinting'). NPO and PMM are obviously independent phenomena, but sometimes they occur together.

Here, we explore the concurrence of NPO and PMM for the period of 1872 – 2012, and found that the concurrence of NPO and PMM is related to the eastward migration of Aleutian Low. A conditional composite analysis showed that only when NPO and PMM occurred together, the El Niño-like SST anomalies were significantly induced in the following winter. Furthermore, the co-variability between NPO and PMM shows the noticeable interdecadal variations, which is somehow related to the change in the mean North Pacific upper-level jet stream. This is because the mean jet stream affects the location and intensity of Aleutian Low. We further analyzed the various coupled model simulations, and found that the model simulations provide consistent results to the observation.